

Notes on some of the British Nepticulidae II

By A. M. EMMET

(continued from Volume 85, p. 283)

*microtheriella**floslactella*

Egg. Underside, beside a rib.

Underside, not always beside a rib.

Mine. Starts as a narrow gallery with a thin central line of frass usually filling less than half the gallery except in occasional cloudy patches. In the second half of the mine the frass is more dispersed and irregular usually filling two-thirds of the gallery. The course of the gallery tends to be straight and angular, following ribs, especially on hornbeam. It is not broader than the width of the larva except in the final chamber. The exit-hole may be on either side of the leaf.

Starts as a narrow gallery almost completely filled with frass. In the second half of the mine the frass is in irregular arcs, almost filling the mine till near the end, where it is concentrated in the centre of the gallery. The gallery is more contorted, seldom following the ribs, and is broader than the width of the larva. The exit hole is on the upper side of the leaf.

Larva. Mines venter upwards. Yellow with dorsal vessel conspicuously green. Head, cephalic ganglia and a rectangular plate on the first thoracic segment light brown. No dark ventral spots.

Mines venter downwards. Dull yellow with the dorsal vessel less conspicuously green. Head and thoracic plate brown, slightly darker than in *microtheriella*; the thoracic plate is also smaller with concave sides. A chain of dark ventral spots obscurely visible from the underside of the leaf.

Cocoon. Small and pink.

Larger, cream-coloured and fluffy with loose strands of silk.

I find the width (not length) of the gallery the easiest mark of distinction.

An interesting point about *microtheriella* is that it appears to be mainly or entirely parthenogenetic. It is an easy species to rear and long series are readily obtainable but these will all be females.

Beirne, however, depicts male genitalia for *microtheriella*. He failed to find male specimens in the collections from which he drew most of his material, but eventually did so in the Temple collection, now incorporated in the Fletcher collection at the British Museum (Natural History). I have examined the specimen, which is in poor condition, and, as far as I can make out, it is correctly determined. Nevertheless, it is suspect since it lacks data and there is nothing to indicate whether it is a bred specimen or was captured as an adult.

Beirne writes of *microtheriella* (1945, pp. 203-204) "This species and *plagicolella* are closely related to each other The larvae of the two species are similar in appearance" [nonsense], "live on the same foodplant (*Corylus*)" [nonsense] "and form the same type of mines" [nonsense]. Such ignorance of the most elementary facts about this common species of Nepticulidae impugns the validity of all Beirne's work: as I have said, he did not know his neps.

To return to the problems of *microtheriella*'s parthenogeneticism, we must suspend judgement. Breeders should be on the lookout for males. If obtained, they should be recorded and dissected in order that Beirne's figure may be checked.

CRATAEGUS (Hawthorn)

(1) *Stigmella paradoxa* Frey (*nitidella* Heinemann). There are new county records as follows:—Hertfordshire, Hatfield Park, vacated mines in 1971 (Mr E. S. Bradford and A. M. E.); Oxfordshire, Watlington, vacated mines in 1971 (Bradford) and 1972 (A. M. E.); Somerset, Leigh Woods near Bristol, vacated mines (A. M. E.); Cumberland, Threlkeld, tenanted and vacated mines on the 10th August, 1972 (A. M. E.). August is a very late date for the larvae, and it may be that *paradoxa* is a later insect in the north. Hering (1957) describes the moth as uncommon on the continent, and the same is true in Britain, though it seems to occur in widely separated colonies. The southern half of Cambridgeshire appears to be its headquarters, and I continue to find it there in new localities such as the Gog Magog Hills and Dernford Fen; however, I have not yet taken it in Essex, my home county. In 1971, *paradoxa* was scarce, but it had recovered in 1972.

Readers may remember that I had found evidence for *paradoxa*'s long-established presence in Britain in the form of a mine in the Stainton herbarium (*Ent. Record* 83: 168). Now I have discovered an old specimen. It is amongst a group of unidentified neps in the Bankes collection at the British Museum (Natural History) and carries data "Corfe [Dorset], Hawthorn, 17.iv.86".

(2) *Stigmella crataegella* Klimesch. At last I have succeeded in breeding a series of this very common moth. It is difficult to rear and even the skilful Professor Waters failed to get it through. It is hard to say which of the earlier entomologists were successful with it because of the confusion between it

and *hybnerella* Hübner (*gratiosella* Stainton) which I discussed at length in my previous notes (*Ent. Record* 83: 138-142, 163-171). The essential tip came from Wood, who describes the pupa as subterranean (see Tutt 1899, p. 256). It may be helpful if I describe my method. I partially filled a six-inch flower-pot with earth, over which I placed a two-inch layer of damp sphagnum moss. On top of this I laid the mined leaves. To prevent desiccation while the larvae were feeding, I tied a sheet of polythene over the pot. As soon as each leaf was vacated, I removed it, and when all the larvae had gone down I substituted a piece of nylon stocking for the non-porous nylon. The pot stood out of doors in a sheltered spot throughout the winter. To reduce the influx of rain-water, which might be accentuated by the funnel shape of the pot, I covered half the top with polythene. I did not bring it indoors until the 13th of May, which was cutting things fine, as the first moth emerged two days later. Twelve moths emerged between the 15th and 25th of May, representing a high proportion of the original stock. I use this method with most of the difficult univoltine species with a fair degree of success: at any rate I reared nearly fifty different species of nep in 1972. With the easier species, sphagnum moss in a jam-jar is good enough. I cannot recommend letting the larvae spin up in tissue which is advocated by some writers.

So far I have been unable to detect any reliable difference in superficial appearance between the imagines of *crataegella* and *hybnerella*. Wood (1894) says that *crataegella* is smaller and has the apical area violet rather than purple but these differences are relative rather than absolute. Mr Bradford has "done the tail" of one of my specimens and reports that the genitalia come close to *oxyacanthella*, the species it resembles most closely in its biology.

(3) *Nepticula ignobilella* Stainton. *Nepticula ignobilella* is dead. No tears will be shed over its demise, for almost from the cradle it has been a source of trouble. As early as 1879 Threlfall suggested (rightly) that it was no more than a sexual form of *gratiosella* Stainton (now *hybnerella* Hübner). Wood (1894) concurred and the subsequent tangled history of the relationship between *hybnerella*, *ignobilella* and *crataegella* Klimesch was set out at length in my previous notes (*Ent. Record* 83: 142, 163-171). Continental entomologists came more and more to regard it as a chimera, referring to it as "*ignobilella* Stainton sensu Beirne" since the obstacle to its reduction to synonymy was Beirne's drawing of its genitalia which he showed as quite distinct from *hybnerella*. In fact, he put *ignobilella* in the genus *Nepticula*, while *hybnerella* was in the genus *Stigmella*. Clearly it was necessary to locate the specimen or specimens described by Beirne and assess their authenticity.

Beirne writes (p. 196) "Where possible at least two preparations, from different collections, of the genitalia of each species were examined. The majority of the preparations

have been deposited at the Department of Entomology, British Museum (Natural History), while the remainder are in the University Museum, Oxford". Having drawn blank at South Kensington, I duly visited the Hope Department of Entomology at Oxford with the kind permission of Professor Varley. There I found that Beirne had dissected two specimens labelled *ignobilella* which had been captured (not bred) at Oxford by Professor Waters on the 27th of July 1925. One of these is a female and the associated slide has deteriorated through crystallisation to such an extent that no genitalia are now visible. This is immaterial, since Beirne figured the male genitalia only and made no use of this preparation. There is no reason to think that the moth is anything other than a red-headed female *hybnerella*.

The other specimen is a male. As soon as I looked at it under the microscope it was obvious that it was *marginicolella* Stainton. The head is black (*ignobilella* should have a red head), the hindwings are clothed in the characteristic androconial scales (no androconial scales have been attributed to *ignobilella*), and the wing pattern, though the moth is rather rubbed, is typical of *marginicolella*. It was only after I had made this identification that I consulted Beirne (p. 203) and read, "A somewhat distinct species, but perhaps nearest to *marginicolella*." Nearer indeed than Beirne had realised! Next I examined the genitalia slide. This too has deteriorated, but not as disastrously as that of the female specimen. The aedoeagus has vanished but the rest of the genitalia are still decipherable. When viewed today, the genitalia more closely resemble the drawing Beirne made for *marginicolella* than his figure of *ignobilella*.

Waters's mistaken determination was quite uncharacteristic. One can picture him capturing two similar-looking moths at the same place and on the same day and, being pressed for time, assuming they were the same species without subjecting them to much scrutiny.

Beirne wrote (p. 191), ". . . in many species of *Stigmellidae* the females appear to outnumber the males . . ." We now believe that *ignobilella* is a name given to the red-headed form of the female of *hybnerella*. So we can imagine Beirne searching through series of *ignobilella* in collections and finding nothing but females. Then at last he found a male determined by the reliable Waters. To ease his conscience and justify his claim that wherever possible two preparations had been made for each species, he also dissected the female captured on the same day—the only female he dissected at Oxford. Later Beirne writes, "Considerable difficulty was found in obtaining reliably identified specimens of some species, as many specimens in some of the collections examined were found to be incorrectly identified". Bear in mind that Beirne had next to no field knowledge of the Nepticulidae or familiarity with the imagines and you see what he was up against. We need not be too harsh with him, though his mistake has

caused a lot of trouble.

It remained to examine Stainton's original material at the British Museum which I was able to do with the permission and valuable help of Dr K. Sattler. A specimen designated as the type has Stainton's data label, "20.x.52—yellow larva—hawthorn—Lewisham". Dr Sattler pointed out that as the moth was already described in 1849, this moth bred in 1852 is not the specimen from which the original description was made. It cannot therefore be properly regarded as the type specimen. It is a red-headed female and its outward appearance is consistent with that of *hybnerella*. The same is true of the other Staintonian specimens of *ignobilella* in the museum.

The earliest known description is in Stainton's *Catalogue of the Tineina*, 1849, p. 29, but even this poses a slight problem. In that work, with new species named and described for the first time, the specific name is followed by the abbreviation "sp. nov.", but in the case of *ignobilella* it is followed by the author's name "Sta.". This implies that Stainton had already described *ignobilella* elsewhere, but if this is so, the reference is lost.

The description itself is interesting: "Much less brilliant than *N. aurella*. Basal portion of the wing brownish; apex violet; fascia placed as in *aurella*, whitish, not silvery; head of the ♂ black; of the ♀ ferruginous". In his subsequent descriptions (*Insecta Britannica* (1854) pp. 302-303; *Natural History of the Tineina* (1855) I. 250 and plate VII), Stainton describes the head and face as "reddish yellow" without any distinction of sex. In this he was followed by Tutt (1899) and Meyrick (1928), who give *ignobilella* as an entirely red-headed species.

So it came about through Stainton's change of mind, that we attributed two species, one red-headed and the other black-headed, to the British list. When it became known that there were, in fact, two black-headed species feeding on hawthorn which were indistinguishable in the imago, but quite different in biology, we supposed we had three. Now we are back again to two, having married the red-headed lady to one of the black-headed gentlemen. I hope they will live happily together ever afterwards.

PRUNUS (Blackthorn)

Extodemia spinosella Joannis is like a much-married film star. Née *Nepticula*, she had already changed her name to *Stigmella* when she first appeared in this country (Emmet 1970). Only a year later we meet her again as *Dechtria* (Emmet 1971). At the moment she is styled *Ectodemia*, but the sinister Sir Jaspar has designs on her: if he has his evil way she will soon be *Trifurcula* (Johansson 1971). All in the space of three years — tut, tut! But she is rather a sweetie, and as the result of exclusive interviews I can now tell the full story of her childhood and adult charms.

Ovum. Laid on the underside of a leaf of blackthorn (*Prunus spinosa* Linn.), generally close to a rib, but sometimes at the margin of the leaf.

Larva. Transparent pale greenish white with a thin dark brown ventral stripe, broadened in the centre of each segment and more conspicuous in young larvae. Head, cephalic ganglia and anal plate light brown. The larva mines venter upwards.

Mine. There are three stages. (a) A gallery completely filled with frass which is so contorted as to form a tiny blotch. (b) An irregular gallery with the frass forming a central line, leaving clear margins. (c) A clear blotch with the frass tending to be concentrated in a mass at the mouth of the phase (b) gallery. The whole mine is small and compact with the blotch often enveloping stages (a) and (b). The larval exit hole is on the upperside of the leaf.

Cocoon. Light pinkish brown and relatively smooth. In captivity the larvae spun their cocoons in a number of situations, but moths emerged only from those spun in moss.

Imago. Expanse 3-4 mm. Head and collar orange to fuscous-orange. Antennae $\frac{1}{2}$ wing, fuscous; eyecaps cream. Forewings light grey, heavily overlaid with rather glossy dark purplish fuscous scales, so as to make the wing appear that colour; a central, direct, silvery white fascia, with its inner edge concave, its outer edge straight; cilia light yellowish grey, the inner half overlaid with coarse, dark fuscous scales. Hindwings light grey, rather coarsely scaled; cilia slightly darker, especially terminally.

The imago closely resembles that of *Ectoedemia agrimoniae* Frey, but is significantly smaller; in fact *spinoseella* is the smallest of the British *Ectoedemia*. This species, like all the British members of its genus, is univoltine. Larvae occur from late July to early October, with August as the month in which they are most plentiful. Six moths emerged in captivity from 5-11 June, 1971 and one on 2 June 1972.

Distribution Devon (Torquay) where it was first found in 1939; Essex (Benfleet 1969-1972, Fingringhoe 1971); Suffolk (Thorpe 1972).

Location of specimens. Of the seven specimens so far reared in Britain, one is in the British Museum (Natural History), five are in my collection, and one escaped.

QUERCUS spp. (Oak)

The notes which cover this foodplant introduce three new species to the British list, correct mistaken tradition about another and supersede much of what has hitherto been written concerning our oak-feeding Nepticulidae. I shall therefore divide my rather lengthy notes into two sections, corresponding to the main divisions of the family.

A. *Stigmella* (*Nepticula*)

In my previous notes on the oak-feeding Nepticulidae (*Ent. Record*, 83: 245), I spoke of the work being done by continental entomologists led by Johansson in Sweden and Borkowski in Poland. An important paper, written in English,

(to be continued)